Advanced Dicing Technologies Ltd.

Your Resource for Advanced Dicing Solutions

ADT 7100

Dicing Series

Vectus/Fortis Model Types

Maintenance Manual

Software Version 5.6.3

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Customer Support

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3 PERIODIC MAINTENANCE

Regular and timely maintenance is essential to keep the Model 7100 in good operating condition. To achieve reliable performance, the maintenance procedures listed in this chapter must be performed at the specified intervals.

Periodic maintenance procedures include the following:

- Examining the status of air pressure and water supplies to the System and inside the System.
- Inspecting the condition and performance of System assemblies and components.
- Performing accuracy measurements.
- Greasing the moving assemblies and components in the System.
- Backing up the Database at regular intervals (see Chapter 11).

Note: The schedule for backing up the Database (daily, monthly, etc.) will depend on the user's requirements.

This chapter contains Periodic Maintenance Tables that detail the list of maintenance procedures to be performed, including tolerance levels, as well as details regarding greasing procedures.

Note: The Periodic Maintenance Tables are printed single-sided for your convenience. Photocopy and file them after completing the procedures listed.

This chapter includes the following sections:

- Daily Maintenance Procedures (page 1 of 3), section 3.1
- Monthly Maintenance Procedures (page 1 of 2), section 3.2
- Quarterly Maintenance Procedures (page 1 of 3), section 3.3
- Greasing Procedures, section 3.4

3.1 Daily Maintenance Procedures (page 1 of 3)

The maintenance procedures in this list should be performed on a daily basis. The list includes the procedures to be performed, the specifications that must be met, and a column for indicating whether the System has passed each procedure.

Caution: All System operations must be stopped and any Workpieces removed, before performing these procedures.

Photocopy this list and mark each completed procedure.

Maintenance Technician Name: _____

Date: _____

Daily Maintenance Procedures		
Examine	**Procedure & Specifications**	**Passed**
Level of air pressure in the Spindle and X-Axis	Read the Air Pressure Gauge on the Pneumatic Panel at the rear of the System (see Figure 10-2). If the air pressure is below 72 psi, adjust the Regulator located above the Gauge by pulling the ring up, rotating the dial and pushing the ring back into place.	
Supply of Spindle cooling water	Stop the flow of cooling water to the Spindle. Verify that the appropriate Error Message is received.	
Water flow control	Feed cooling water onto the Cooling Block. Verify that the reading in the Setup & Diagnostics Workbook meets process specifications. Verify that the flow of water from the Cooling Block Nozzles onto the Blade is constant.	
Presence of water leaks outside the System	Inspect the floor in the area surrounding the System for traces of water. Inspect all external Tube and hose connections.	

Daily Maintenance Procedures
(page 2 of 3)

Maintenance Technician Name: _____

Date: _____

Daily Maintenance Procedures		
Examine	**Procedure & Specifications**	**Passed**
Water leaks inside the System	Open the Front Door and remove the Front Bottom Cover to inspect the Electronic Bench and the X Casting gutter for signs of leakage. Inspect the X Casting gutter for signs of blockage or for a kink in the Drainage Tube. Remove the Rear Side Lower Left Panel and inspect the area of the Pneumatic Panel for signs of leakage.	
Cleaning Dicer	Remove all waste material that has collected on the X Bellows. Clean the collecting waste filter pan. Use a sponge and clean water (DI water recommended) to remove sediment from: • X Protector • Cooling Block (metal parts) • Internal Covers • Wheel Mount	
Cleaning Microscope Lens	Clean the Microscope lens with a cotton swab and isopropyl alcohol.	
Height Device	For Systems with an optical, Non-Contact Height Device: Clean the internal vertical prism surfaces with a cotton swab and isopropyl alcohol and water. Clean ***only*** the internal vertical surfaces that face each other. Do ***not*** clean the two external angled surfaces. For Systems with a Mechanical Button: Clean the surface of the Button with a cotton swab, isopropyl alcohol and water.	

Daily Maintenance Procedures
(page 3 of 3)

Maintenance Technician Name: _____

Date: _____

Daily Maintenance Procedures		
Examine	**Procedure & Specifications**	**Passed**
Broken Blade Detector	Clean the LED and Sensor with a cotton swab and isopropyl alcohol or water. Tune the BBD, as described in Chapter 7.	
Hinged Covers	Clean the inside of the front transparent covers with a clean rag and water.	

3.2 Monthly Maintenance Procedures (page 1 of 2)

The maintenance procedures in this list should be performed on a monthly basis after performing the daily maintenance procedures. The list includes the procedures to be performed, the specifications that must be met, and a column for indicating whether the System has passed each procedure.

Caution: All System operations must be stopped and any Workpieces removed, before performing these procedures.

Photocopy this list and mark each completed procedure.

Maintenance Technician Name: _____

Date: _____

Monthly Maintenance Procedures		
Examine	**Procedure & Specifications**	**Passed**
Perform Daily Maintenance Procedures	See section 3.1.	
Clean the X Axis	Power down the System (without turning off Air), detach the X Bellows from the X Carriage, and clean the surface of the X Axis with a lint-free cloth and methanol.	
Grease the X, Y & Z Axes	See section 3.4.	
Extent of Wheel Mount Front Surface Runout	Wheel Mount Front Surface Runout should not be greater than 2.5 microns. (See Chapter 5 for details.)	
Up and down movements of the MHS (for Systems equipped with the Auto Loader option only)	Operate the up/down movement of the Pick-Up Arms on the MHS from the Setup & Diagnostics Workbook. Switch to Unprotected Mode and use the software to manually raise and lower the Pick-Up Arms. Verify that each Arm moves up and down smoothly.	

Monthly Maintenance Procedures (page 2 of 2)

Maintenance Technician Name: _____

Date: _____

Monthly Maintenance Procedures		
Examine	**Procedure & Specifications**	**Passed**
Condition of the Suction Cups on the Cutting Chuck and the MHS (for Systems equipped with the Auto Loader option only)	Inspect the Suction Cups for cracks and replace, if necessary. Ensure that the Suction Cups are clean. When necessary, clean the Suction Cups with lint-free swabs and water.	
Inspecting the Spindle Brushes	Check the amount of graphite left in each Spindle Brush. If the length of either Spindle Brush is 3-4mm or less, replace both Spindle Brushes, as described in Chapter 5.	
Checking the correct operation of the overflow sensor	Turn on the cutting water. Then, very carefully, move the float of the sensor upwards. Expected results: An error message should appear, all water in the system should stop, the simulated LED in the Setup & Diagnostics screen should turn red. (see more details in Chapter 2 of the Operation Manual).	

3.3 Quarterly Maintenance Procedures (page 1 of 3)

The maintenance procedures in this list should be performed on a quarterly basis after performing the daily and monthly maintenance procedures. The list includes the procedures to be performed, the specifications that must be met, and a column for indicating whether the System has passed each procedure.

Caution: All System operations must be stopped and any Workpieces removed, before performing these procedures.

Photocopy this list and mark each completed procedure.

Maintenance Technician Name: _____

Date: _____

Quarterly Maintenance Procedures		
Examine	**Procedure & Specifications**	**Passed**
Perform Daily Maintenance Procedures	See section 3.1.	
Perform Monthly Maintenance Procedures	See section 3.2.	
Remove old grease from X, Y and Z Axes	See section 3.4.	
Operation of the Main Circuit Breaker switch and the Emergency Stop button	• While the System is powered on, turn off the Main Circuit Breaker at the right side of the System. Verify that System operation stops immediately. • While the System is operating, push the Emergency Stop button. Verify that System operation stops immediately.	
Level of air pressure in the System	Read the Air Pressure Gauge on the Pneumatic Panel (see Figure 10-2). If the air pressure is below 4-5atm, adjust the Regulator located on the left behind the Rear Side Lower Left Panel by pulling the ring up, rotating the dial and pushing the ring back into place.	

Quarterly Maintenance Procedures
(page 2 of 3)

Maintenance Technician Name: _____

Date: _____

Quarterly Maintenance Procedures		
Examine	**Procedure & Specifications**	**Passed**
Cutting Chuck Flatness	See Chapter 5. The specifications are: • 6 inch (150 mm) Chuck - 7 microns • 8 inch (200 mm) Chuck - 10 microns • 12 inch (300 mm) Chuck - 15 microns	
Condition of the Cutting Chuck	Inspect the condition of the Cutting Chuck. Clean the Chuck: • when dirt is apparent on the Chuck or the underside of the Tape. • when error messages associated with the Cutting Chuck appear, and other potential causes have been ruled out. Use ultrasonic cleaning equipment and purified water for cleaning. Use an Arkansas Stone to finely abrade the surface and remove small protrusions. Clean the underside of the Chuck by blowing an alcohol-air mixture, then blow with dry air until the Chuck is completely dry.	
Parallelism of the Spindle to the X Axis	See Chapter 5. The specification is 5 microns.	
Spindle Runout (radial & axial)	See Chapter 5. The specification is 1 micron.	

Quarterly Maintenance Procedures
(page 3 of 3)

Maintenance Technician Name: _____

Date: _____

Quarterly Maintenance Procedures		
Examine	**Procedure & Specifications**	**Passed**
Straightness of the X Axis (horizontal & vertical)	See Chapter 2. The specification is 1 micron for a 415 mm stroke.	
Accuracy of Y Axis positioning	Place a Workpiece with a known index on the Cutting Chuck. Perform Auto Alignment, then measure the distance between the first and last streets to calculate the Index.	
Cleaning the Y Axis Linear Encoder	If a problem occurs with the Y Axis, open the Front Cover, remove the Y Bellows, and clean the Linear Encoder with a cotton swab and methanol (not isopropyl alcohol).	
Z Axis Repeatability	See Chapter 6. The specification is 1.0 micron.	
Verify and Adjust Finger Belt Tension (for Systems equipped with the Auto Loader option only)		

3.4 Greasing Procedures

This section describes the greasing procedures for Axes and Leadscrews on the Model 7100. These components must be properly greased to ensure reliable System operation, otherwise they can wear down and cause inaccuracies.

Note: Greasing requires basic knowledge of System operation. Please refer to the **ADT Model 7100 Semi-Automatic Operations Manual** for the relevant operation procedures, as well as the safety precautions in the Safety First section at the front of this manual, before starting the greasing procedures.

The following components should be greased every month:

- X Axis
- Y and Z Axis

3.4.1 Greasing Equipment

3.4.1.1 Grease Gun

Advanced Dicing Technologies recommends the Model KH-120 Grease Gun (P/N 27795-0501-000). The Grease Gun is manufactured to meet the JISB9808-Grease Gun-L100 standard.

Note: Any Grease Gun that meets the JISB9808 standard may be used. The Grease Nipples on the Model 7100 meet the JISB1575 standard.

The Grease Gun may have either a press or pull-type lever for applying grease.

3.4.1.2 Grease Type

Use ISOFLEX NBU15 grease (P/N 39087-0016-000). Contact ADT Customer Support for purchasing information.

Note: If the Model KH-120 Grease Gun is ordered from ADT, it is delivered greased with ISOFLEX NBU15 grease.

Caution: The Leadscrews and Linear Guides are greased before shipment of the System to the Customer. ADT uses long-life grease that exhibits minimal liquid-oil separation. If a different type of grease is used, there may be changes in the greasing interval requirements, as well as chemical reactions between the new grease and the remaining ISOFLEX NBU15 grease. It is therefore essential to use the correct grease.

3.4.1.3 Waste Cloth

Make sure that there is a sufficient supply of waste cloth available during greasing. Waste cloth is used for wiping off old grease or excess grease that

is ejected during greasing. If greasing is done in clean-room conditions, use dust-free waste cloth.

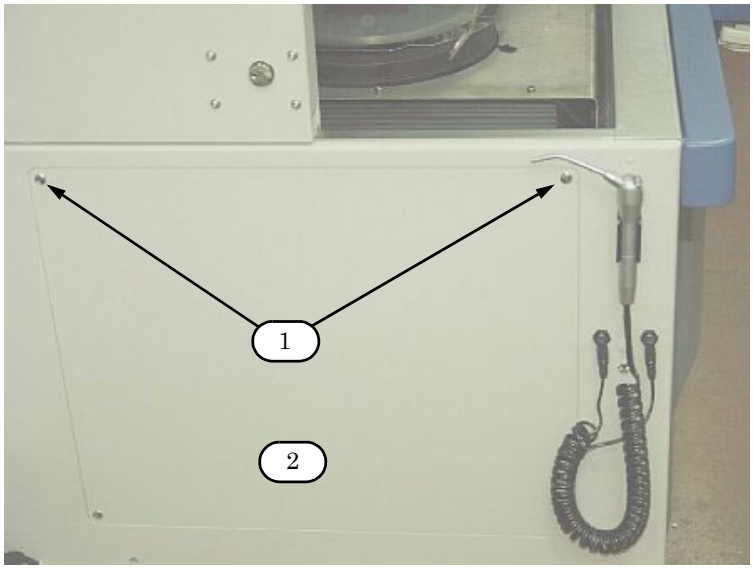
3.4.2 Greasing the X Axis

Grease the X Axis Leadscrew on a monthly basis by performing the following procedure.

Note: On a quarterly basis, remove the old grease before applying the new grease, as described in section 3.4.2.1.

To Grease the X Axis:

1 Open the Left Side Panel by removing the two securing screws.



1 Securing Screws
2 Left Side Panel

Figure 3-1: Left Side Panel

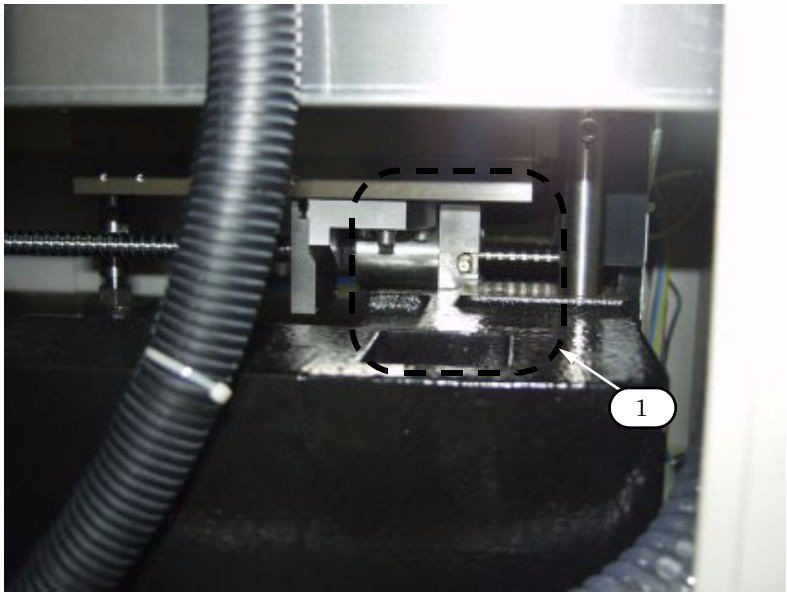
Note: At this point, the user may want to disconnect the pipes that supply water and air to the water and air gun. The water and air supply to the System must be closed.

2 Move the X Axis to the Home position, as follows:

a. Open the Video Workspace.

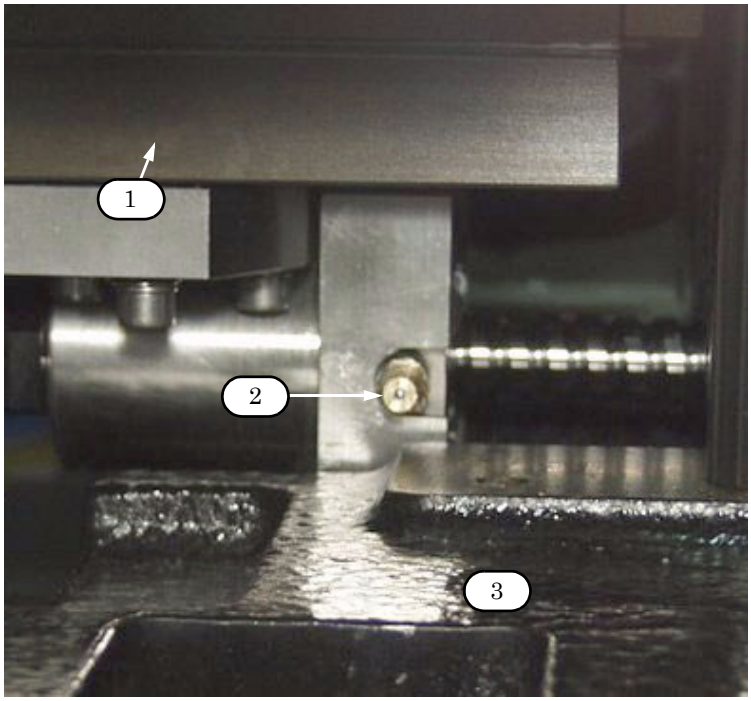
b. Using the left group of arrows, move the X Axis left till the X Axis grease nipple is easily accessible for the grease gun.

3 Apply grease to the X Axis grease nipple. Use waste cloth to wipe off any excess grease.



1 Area Shown in Detail in Figure 3-3

Figure 3-2: Left Side of System with Left Cover Removed



1 Bath
2 X Axis Grease Nipple
3 X Casting

Figure 3-3: X Axis Grease Nipple

Note: Press the lever of the Grease Gun three times to feed sufficient grease into the nipple.

4 Initialize and operate the newly greased X Axis, as follows:

a. Click in the toolbar to display the Setup & Diagnostics workbook.

b. From the Setup & Diagnostics tree, select **saw > Dicer > Axes > X**.

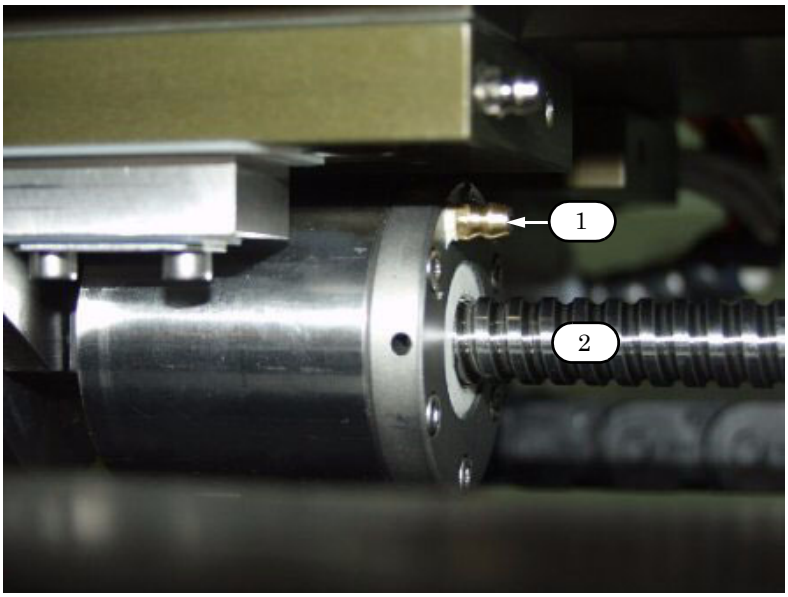
c. In the lower right pane, click **Init** to initialize the axis, then click **Toggle Self Test**. The X Axis begins moving automatically between its two limits. Allow the X Axis to continue moving for one minute, then click **Toggle Self Test** again to turn off the self-test.

3.4.2.1 Removing the Old Grease from the X Axis

On a quarterly basis, the old grease should be removed from X Axis before applying new grease.

To Remove Old Grease from the X Axis:

1 Open the Front Door of the System to reveal the X Axis Leadscrew.



1 X Axis Grease Nipple
2 Leadscrew

Figure 3-4: Left X Leadscrew and Grease Nipple

2 Remove the old grease from the Leadscrew using waste paper.

3 Grease the X Axis, as described in section 3.4.2.

3.4.3 Greasing the Y and Z Axes

Grease the Y and Z Axes simultaneously, by performing the following procedure.

Note: On a quarterly basis, remove the old grease before applying the new grease, as described in section 3.4.2.

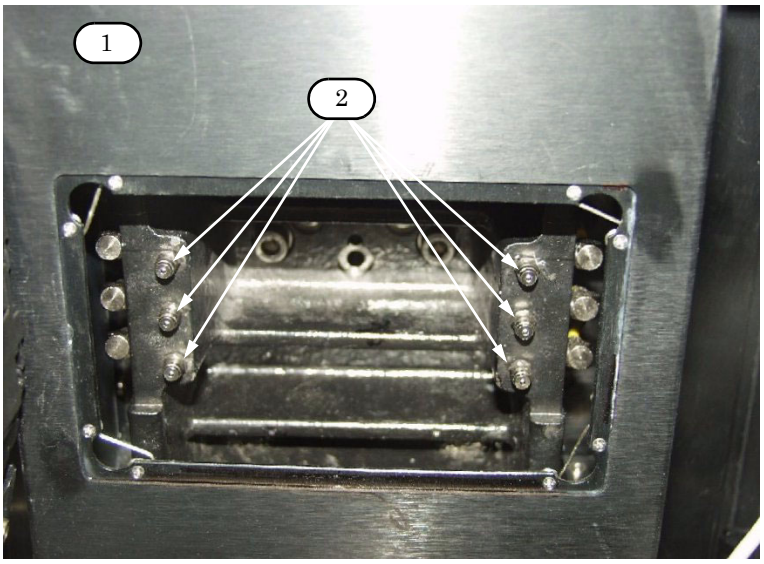
To Grease the Y and Z Axes:

1 Remove the Maintenance Panel.

2 Remove the four screws securing the Z Casting Access Panel to the Z Casting Cover, and remove the Z Casting Access Panel.

3 In the Video Workspace use the left group of arrows to align the Z Casting Access Panel with the Maintenance Panel.

4 Apply grease to the six grease nipples, three on each side of the Z Casting. Use waste cloth to wipe off any excess grease.



1 Z Casting
2 Grease Nipples

Figure 3-5: Z Casting Grease Nipples

Note: Press the lever of the Grease Gun three times to feed sufficient grease into the nipples.

5 Initialize and operate the newly greased Y and Z Axis, as follows:

a. Click in the toolbar to display the Setup & Diagnostics workbook.

b. From the Setup & Diagnostics tree, select **saw > Dicer > Axes > Y**.

c. In the lower right pane, click **Init** to initialize the axis, then click **Toggle Self Test**. The Y Axis begins moving automatically between its two limits. Allow the Y Axis to continue moving for one minute, then click **Toggle Self Test** again to turn off the self-test.

d. From the Setup & Diagnostics tree, select **saw > Dicer > Axes > Z**.

e. In the lower right pane, click **Init** to initialize the axis, then click **Toggle Self Test**. The Z Axis begins moving automatically between its two limits. Allow the Z Axis to continue moving for one minute, then click **Toggle Self Test** again to turn off the self-test.

3.4.3.1 Removing the Old Grease from the Y and Z Axes

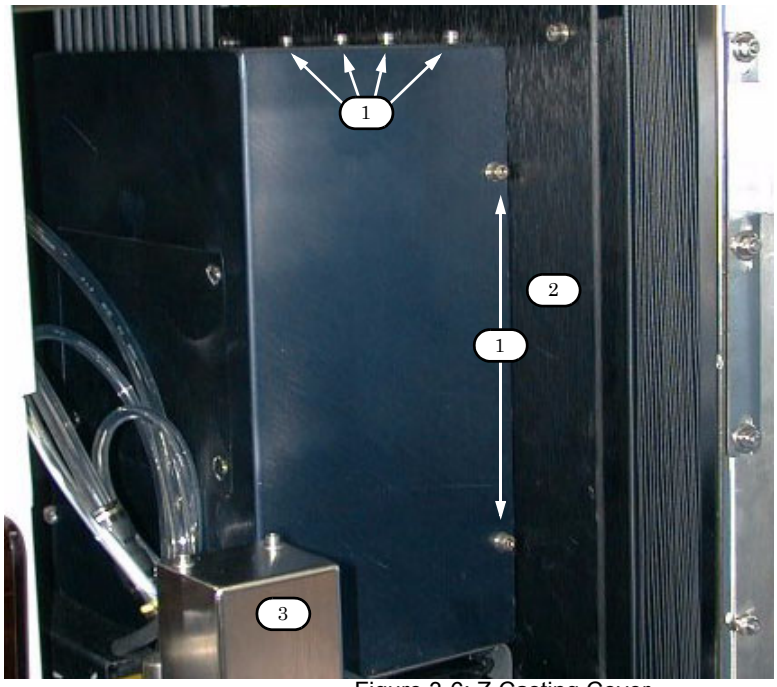
On a quarterly basis, the old grease should be removed from the Y and Z Axes before applying new grease.

To Remove the Old Grease from the Y and Z Axes:

1 In the Video Workspace, click and hold the down arrow (in the group of arrows on the right of the Workspace) until the Z Axis reaches its lowest position.

2 Open the Front Clear Cover.

3 Remove the eight screws (2 on front, 4 on top, 2 on back) that secure the Z Casting Cover and remove the Cover.



1 Screws on Z Cover (6 of 8)
2 Y Bellows Cover
3 Camera Cover

Figure 3-6: Z Casting Cover

4 Remove the four Y Bellows Cover screws and move the Bellows to one side.

5 Remove the old grease from the Leadscrew using waste paper.

6 Grease the Y and Z Axes, as described in section 3.4.3.

7 Re-attach the Y Bellows to the Y Bellows Cover, using the screws previously removed.

8 Re-attach the Z Casting Cover, using the eight screws previously removed.

9 Close the hinged Spindle Cover.